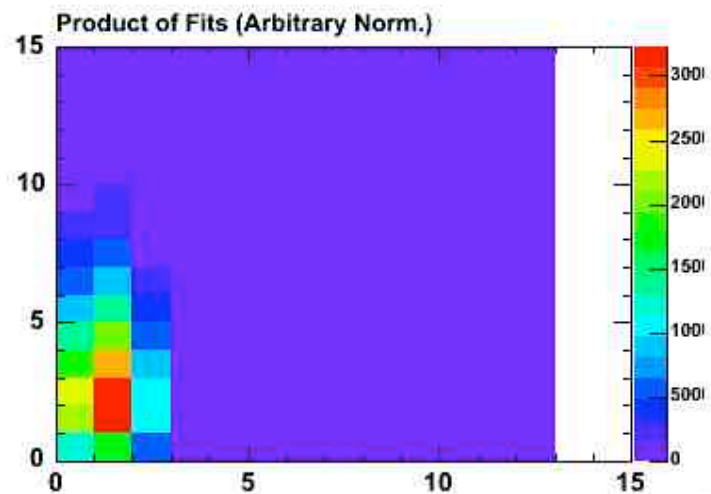
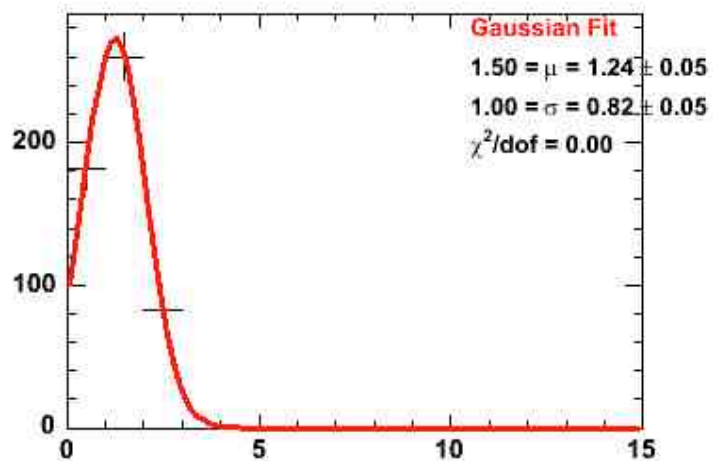
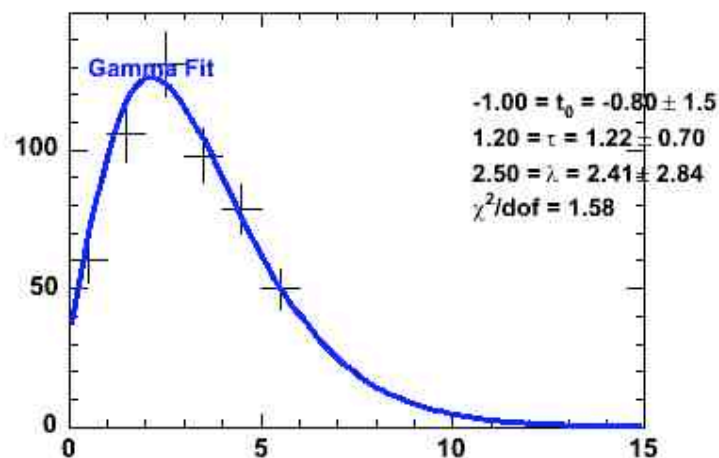
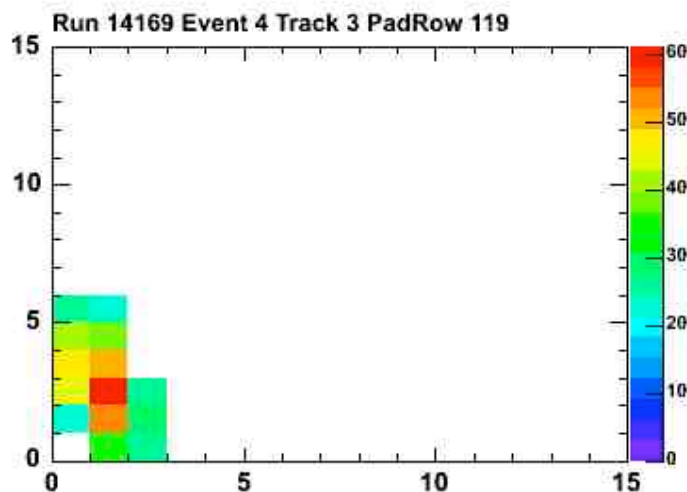


# Hit Finder (Peak Fitter)

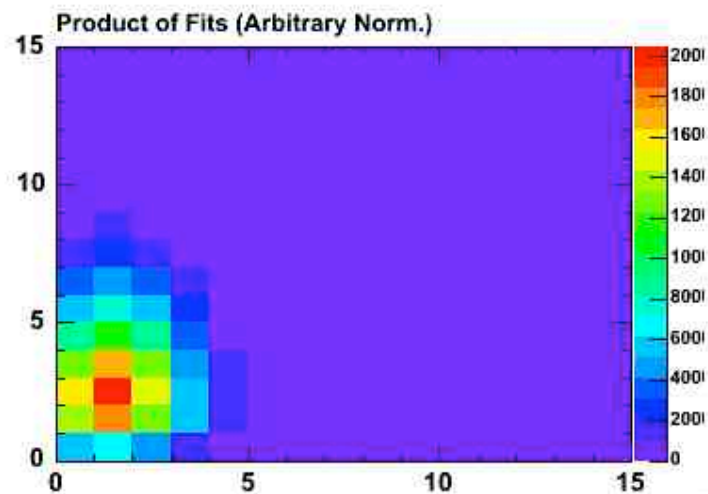
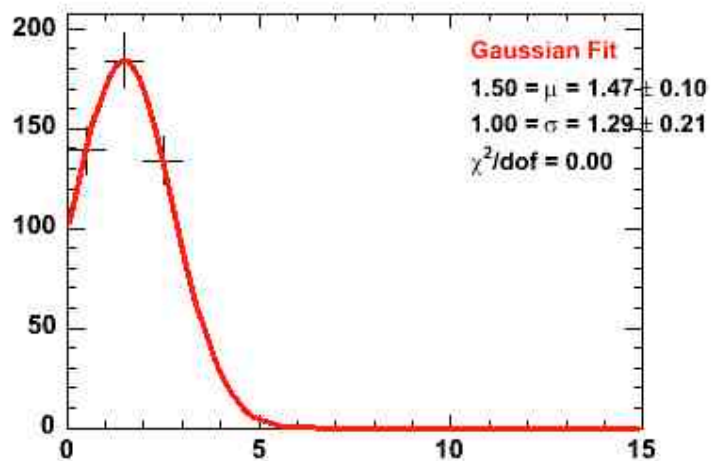
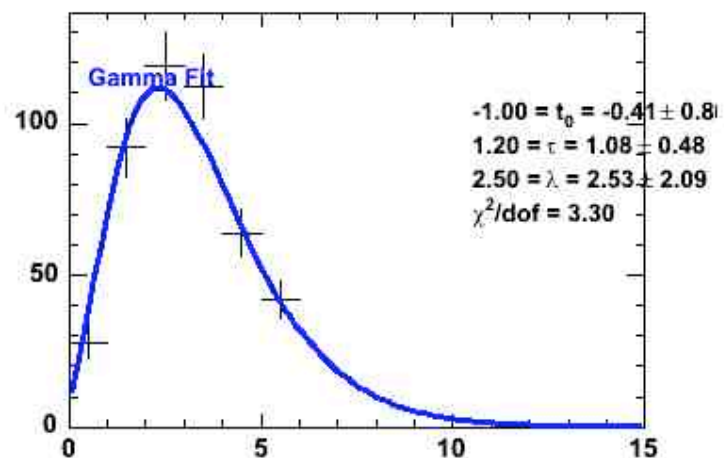
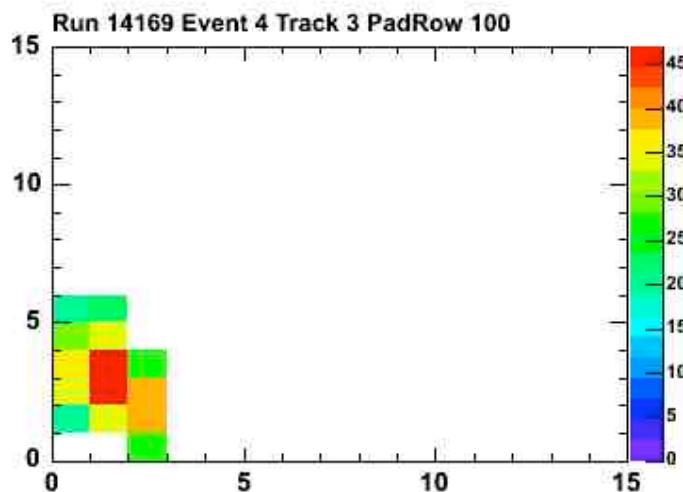
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- 1D Fits
  - Gaussian in X, Gamma in Y (time)
  - Levenberg-Marquart : fast, accurate if close to minimum
  - 2-3 iterations per 1D fit
- Data from Run 14169, Event 4, Track 3
- Results
  - good fits to single peaks
  - poor fits to single peaks
  - poor fits to double peaks
  - poor fits to clusters with wings (to be shown)
  - reasonable fits to truncated clusters

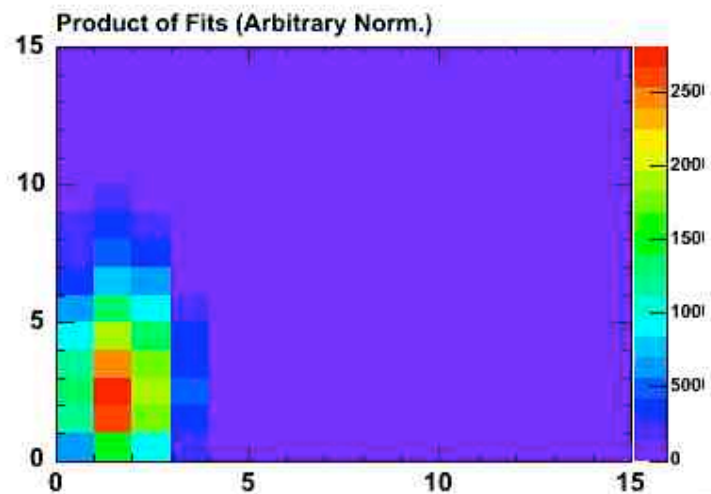
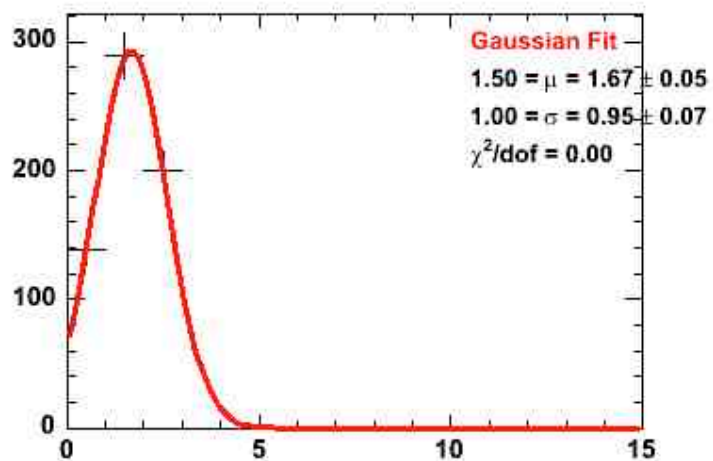
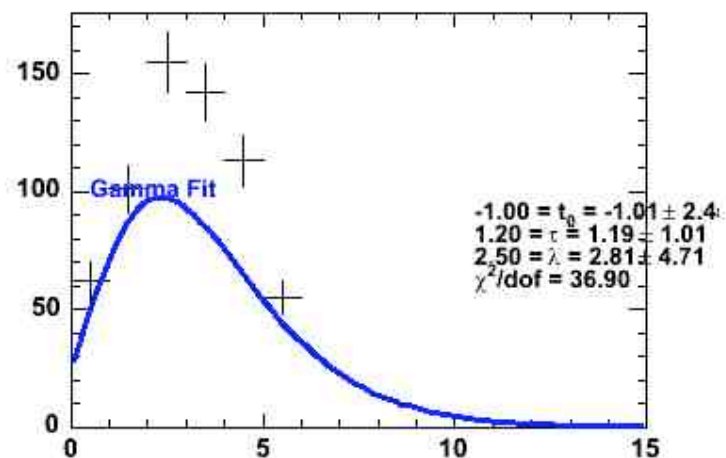
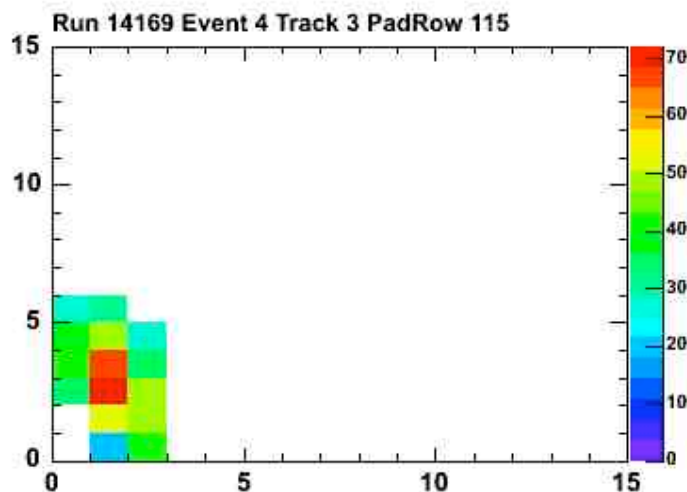
# Good Fit to Single Peak



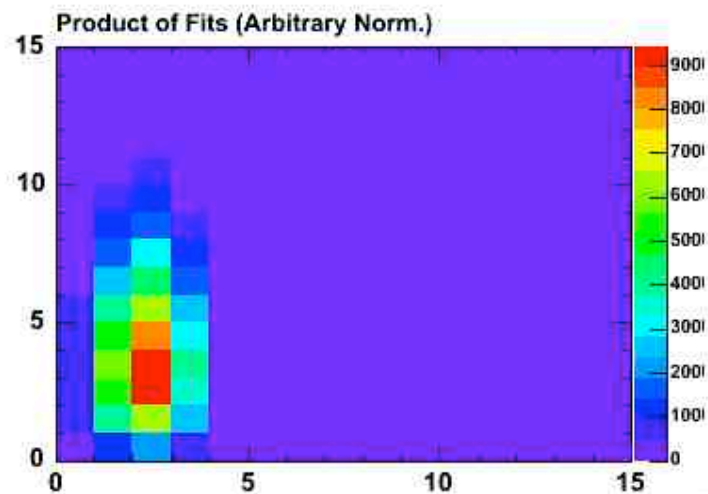
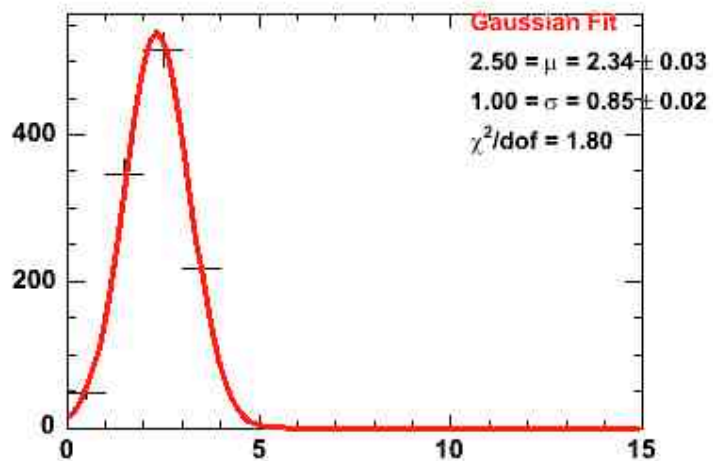
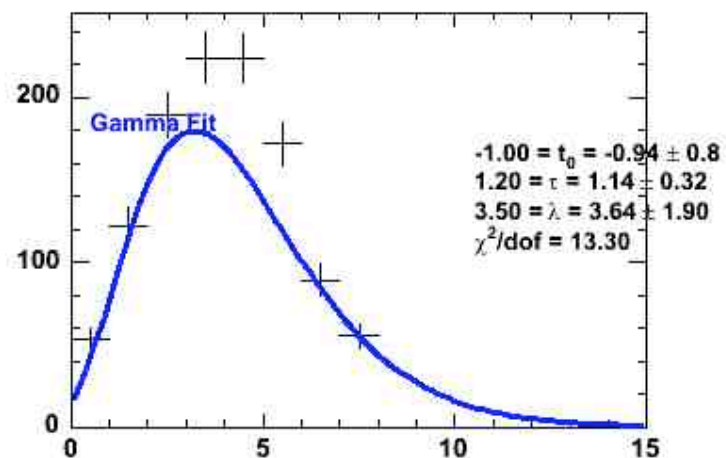
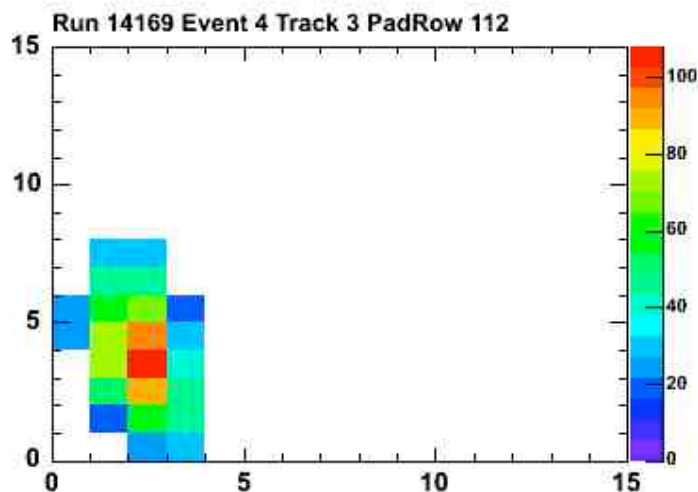
# Good Fit to Single Peak



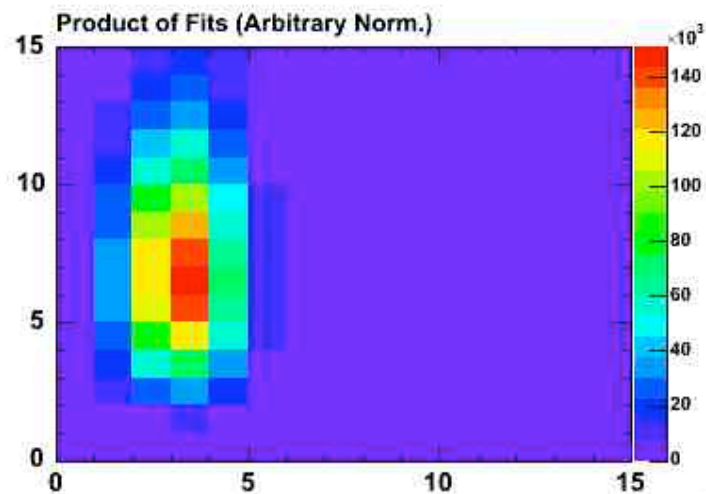
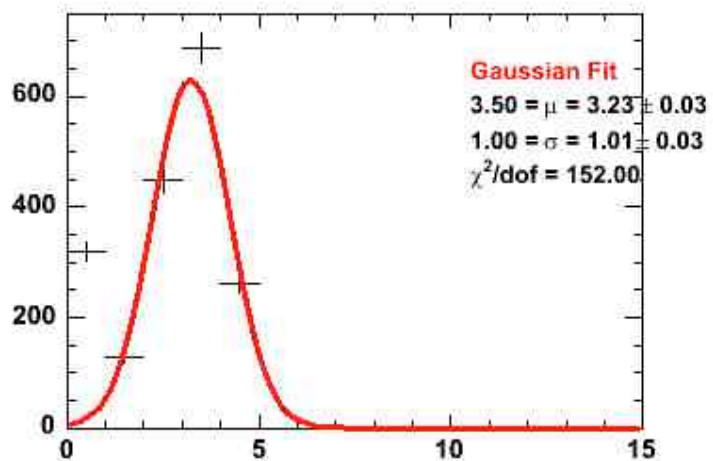
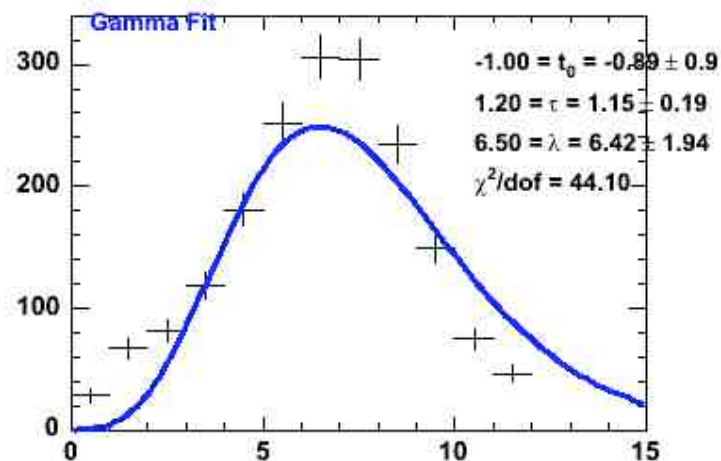
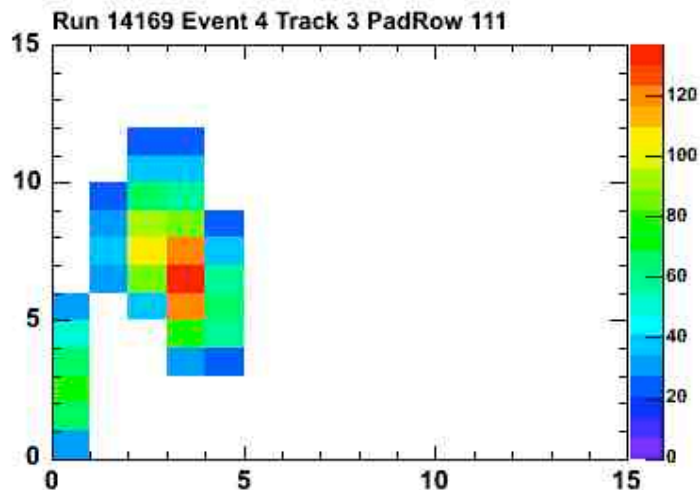
# Poor Fit to Single Peak



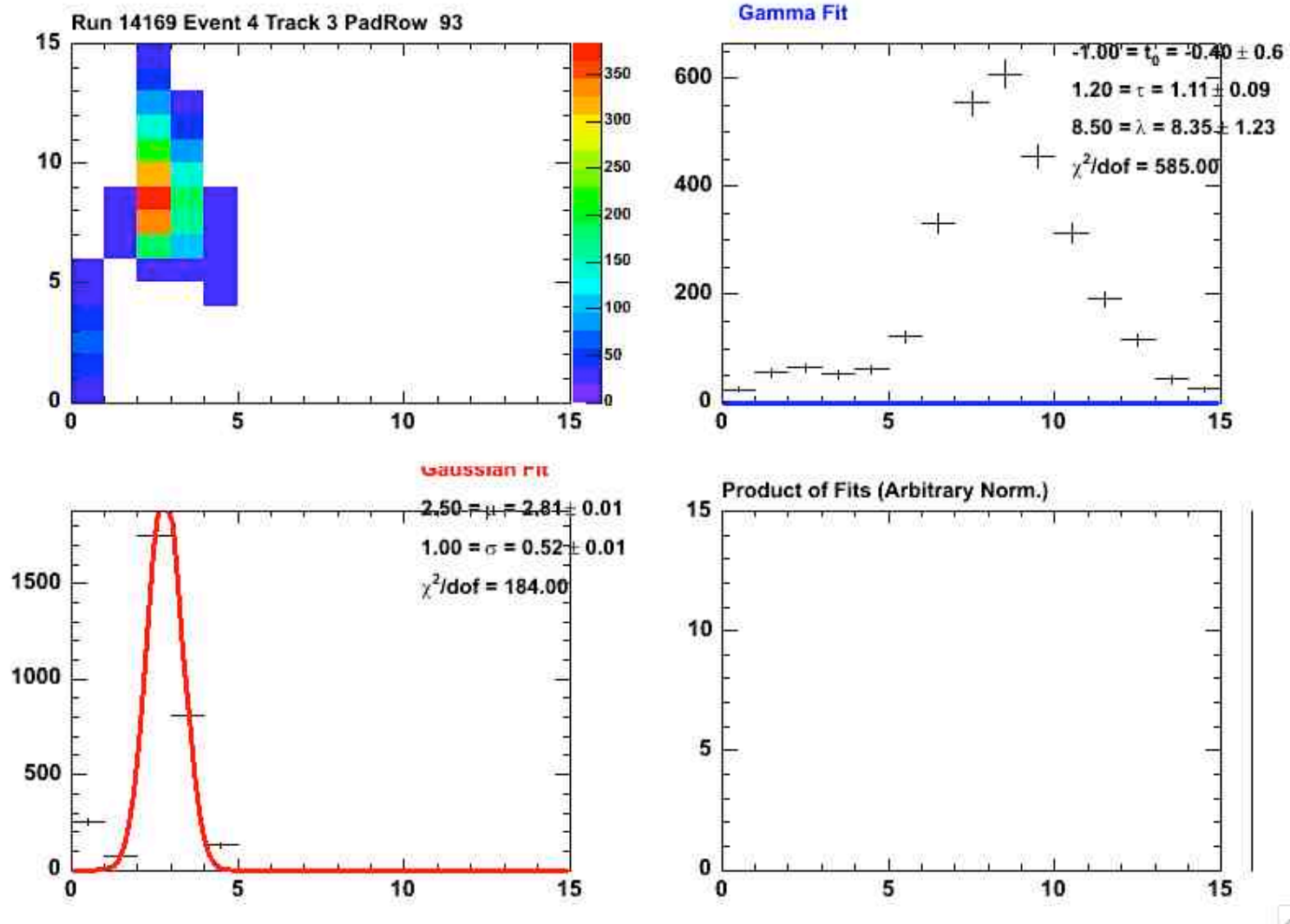
# Poor Fit to Single Peak



# Poor Fit to Winged Cluster

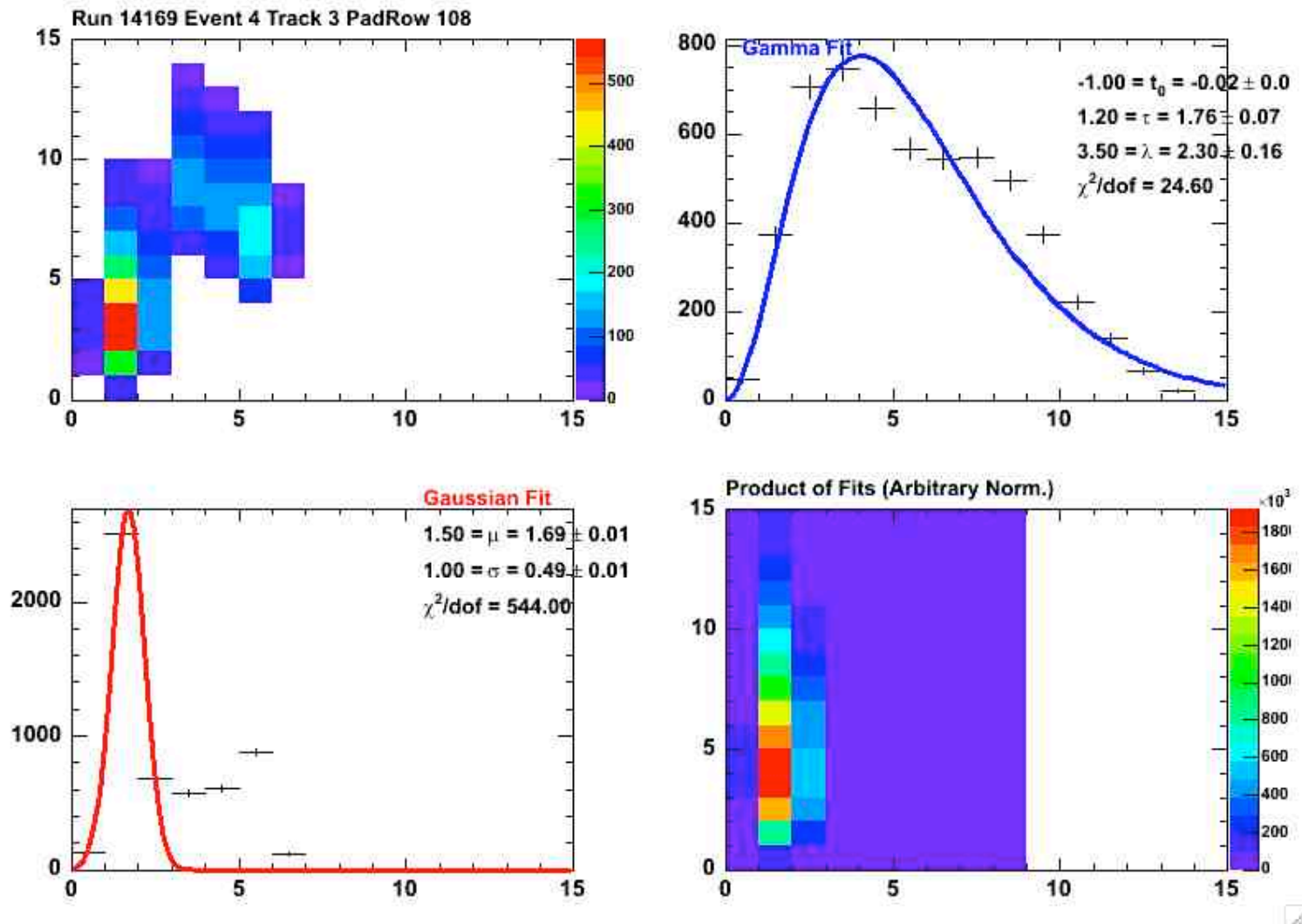


# Poor Fit to Winged Cluster



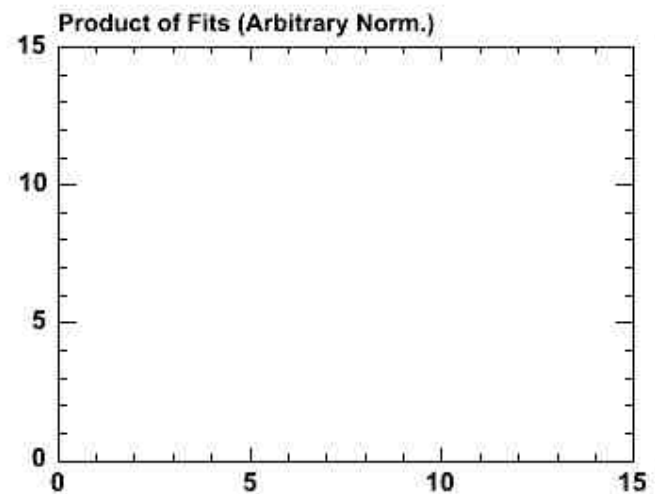
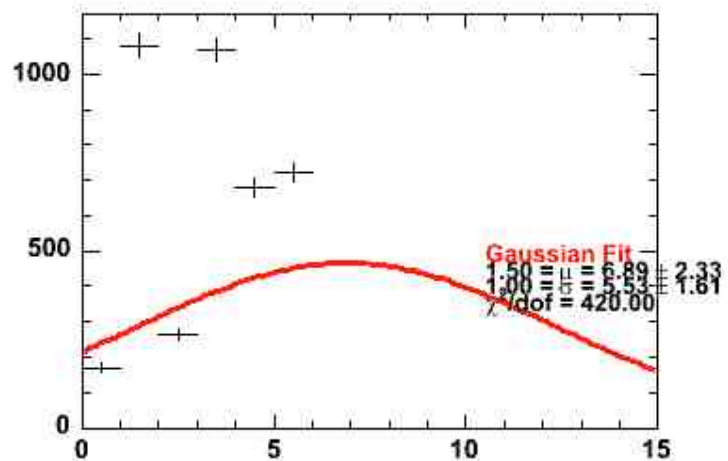
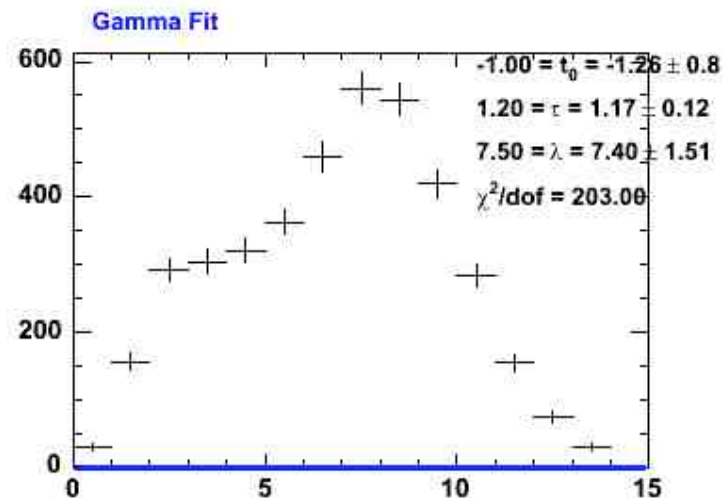
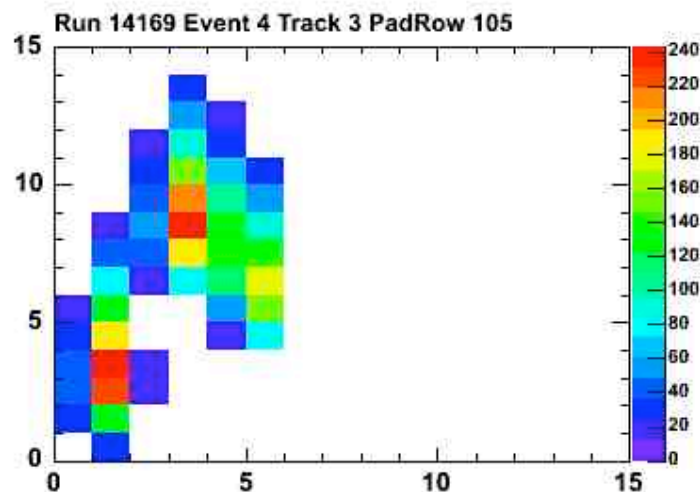


# (not so) Poor Fit to Double Peak

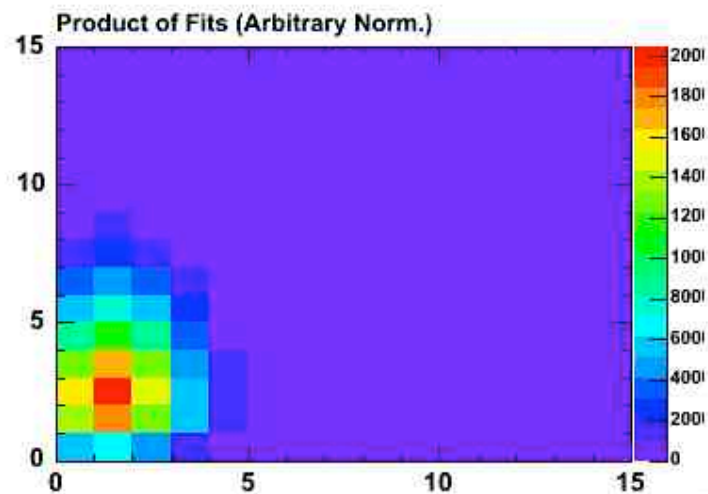
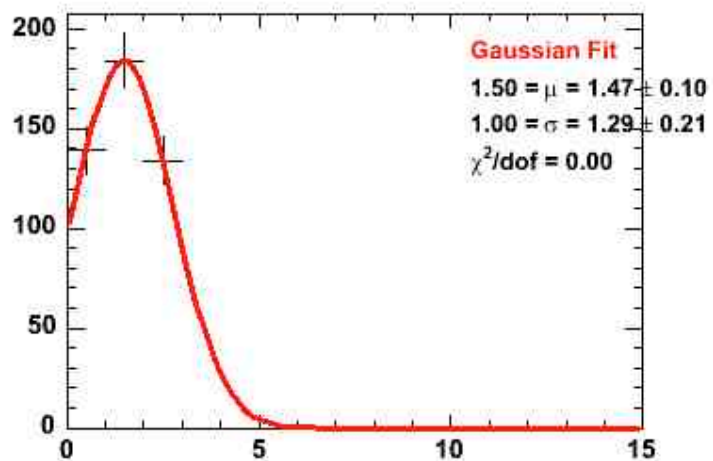
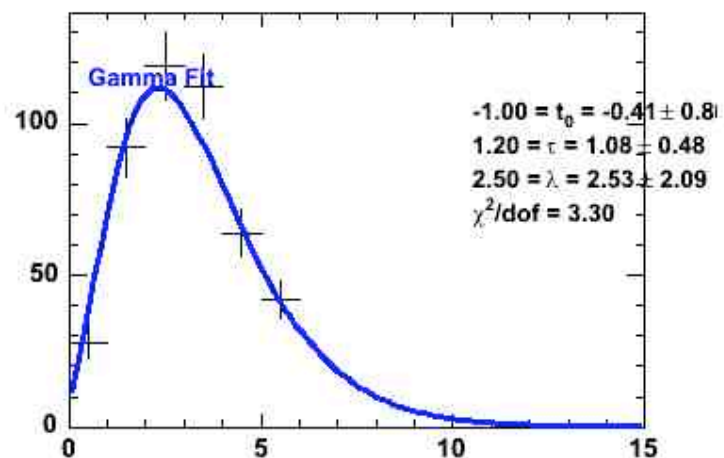
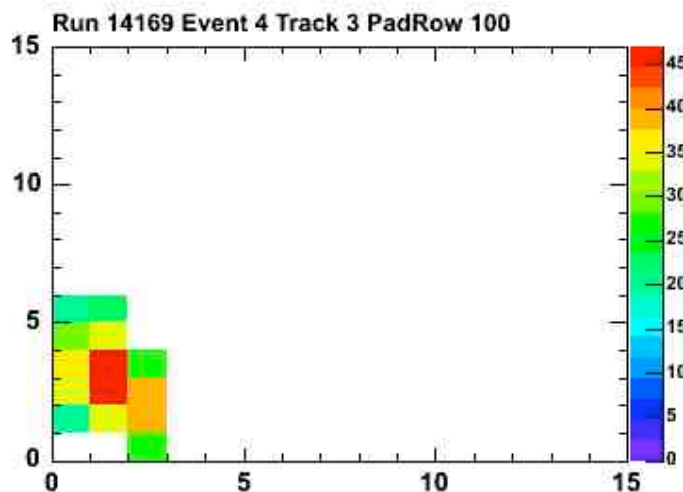




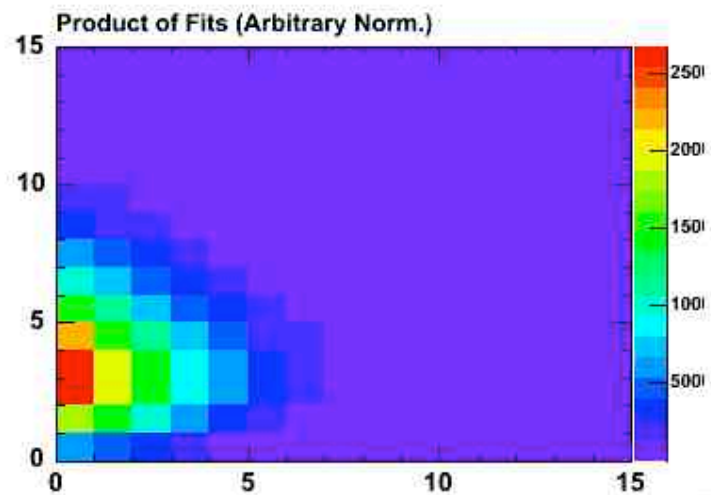
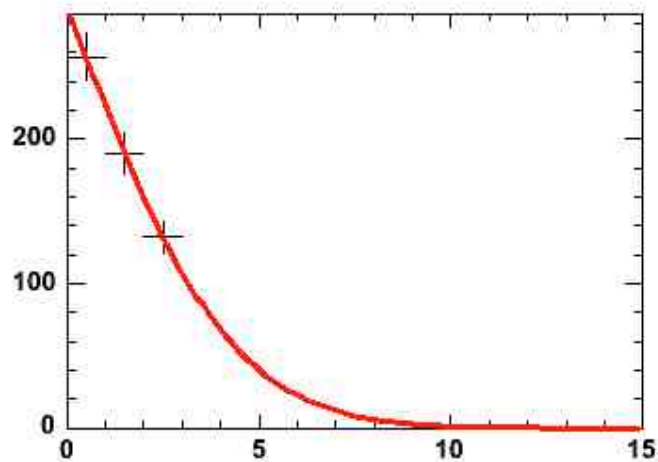
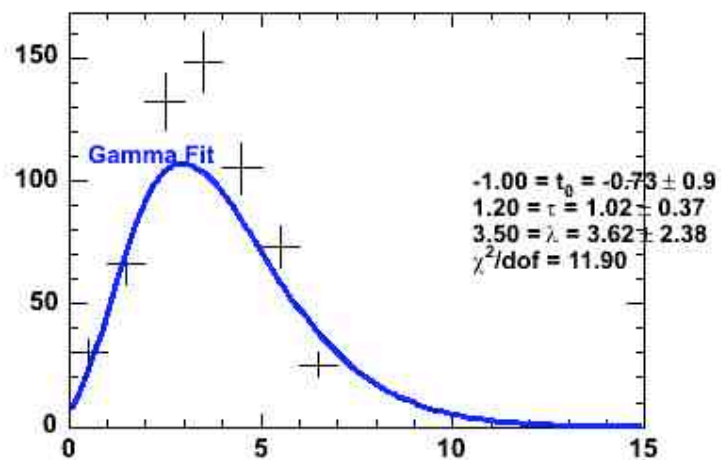
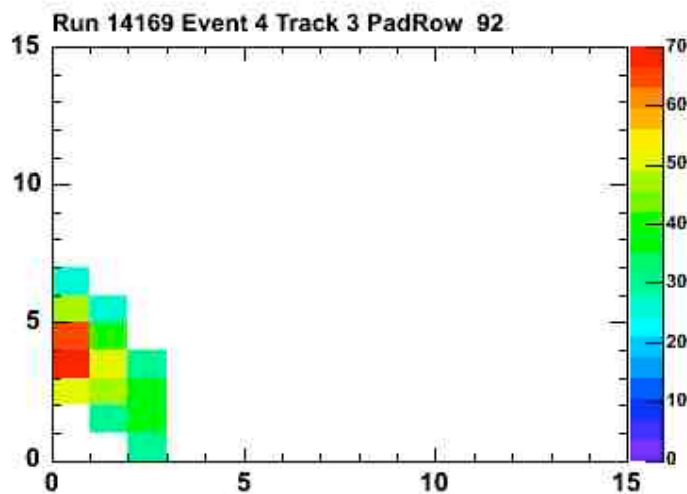
# Poor Fit to Double Peak



# Good Fit to Single Peak



# Truncated Peak



# Status

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- Test more data
  - a single track is not enough
- Tune Clusters
  - with trimmed clusters, 1D fits may work fine
- Revisit need for Gamma fn.
  - time distributions look more symmetric than I recall
  - Gaussian may work if we stay near peak
  - 2D Gaussian fit restricted to peak may be fast & accurate
- From last time
  - convert ADC to charge with Poisson errors on electrons
  - look into GSL, Root functions to replace Numerical Recipes